canals. Of this appearance an exact representation is given in annexed drawings. It explains, says the author, the important change which the blood undergoes after extravasation in living animals, and leaves no difficulty in accounting for its becoming vascular by receiving the red blood into the tubes thus prepared.

The author concludes his lecture by acknowledging his obligations to the unexampled zeal and exertions of the President in promoting and facilitating scientific pursuits. It was under his encouragement, and in compliance with his wishes, that Mr. Bauer, laying aside for the time his customary researches in vegetable anatomy, turned his attention to the subject of the present communication, and assisted in bringing those appearances to light, which, without his aid, must still have remained in obscurity.

Some Additions to the Croonian Lecture, on the Changes the Blood undergoes in the Act of Coagulation. *By Sir* Everard Home, *Bart. V.P.R.S.* Read March 5, 1818. [*Phil. Trans.* 1818, *p.* 185.]

The object of this paper is to furnish a more correct measurement of the globules of the blood than that formerly offered, and to establish, by additional facts, the author's opinion respecting the formation of tubes during the coagulation of the blood. The diameter of a globule of blood, as ascertained by Mr. Bauer, was considered as $\frac{1}{2000}$th of an inch; whereas it appeared, from the more correct investigations of Capt. Kater, to be only $\frac{1}{5000}$th. To show that the extraction of air was the cause of the tubular structure observed in coagulated blood, the author placed a portion of recently drawn blood under the receiver of an air-pump; and when it had coagulated, the air having been thus previously removed, no tubular appearance was manifested. In a portion of the same blood, coagulated previous to the exhaustion of the air, the tubuli were beautifully distinct. The author succeeded in injecting these tubuli by placing some fine size injection upon a piece of coagulum, and putting it under the receiver of the air-pump: during exhaustion the air escaped, and on its readmission into the receiver the injection was forced into the tubular structure. Sir Everard next proves that coagula of blood, formed in the abdomen, may be injected from the contiguous vessels; and on microscopic examination it is shown, that the small arteries of the peritoneum enter the tubuli of the coagulum, and that the latter form vessels larger than the former; and that there are lateral points of communication between the tubuli and arteries. Sir Everard next relates some experiments upon pus similar to those upon the blood,—a fact, he observes, of much importance in practical surgery; for knowing that inspissated pus becomes vascular similar to coagulated blood, we have arrived at the principle on which granulations are formed, and whence they observe their inherent power of contraction. 'We can also account for the advantage of compressing the surface of sores; since by that means, continues the author, all superfluous pus is removed, leaving only enough for inspissation, in which state it

becomes tubular, afterwards vascular, and then takes the form of healthy granulations.

On the Laws of Polarization and Double Refraction in regularly Crystallized Bodies. *By* David Brewster, *LL.D. F.R.S. Lond. and Edin. In a Letter to the Right Hon. Sir* Joseph Banks, *Bart. G.C.B. P.R.S.* Read January 15, 1818. [*Phil. Trans.* 1818, *p.* 199.]

In the different inquiries which the author has already laid before this Society, his attention was often directed to the phenomena of regular crystals; but he only lately succeeded in reducing under a general principle all those complex appearances which result from the combined action of more than one axis of double refraction. In this paper Dr. Brewster gives a general view of the present state of our knowledge respecting the double refraction and polarization of light, and afterwards traces the steps which led him to the discovery of the general law. He began his researches by the examination of 165 crystals, in 145 of which he discovered the property of double refraction. In 80 he was able to ascertain whether they had one or more axes; and by examining the tints which they exhibited at various angular distances from the axes, whence the forces emanate, he has been led to a general principle, which embraces all the phenomena and extends to the most complex as well as to the most simple development of the polarizing forces. This general principle, says Dr. Brewster, is in no respect an empyrical expression of the facts which it represents, nor is it supported by any empyrical data. Founded on the principles of mechanics, it is a law rigorously physical, by which we are enabled to calculate all the tints of the coloured rings, and all the phenomena of double refraction, with as much accuracy as we can compute the motions of the heavenly bodies.

The faculty of depolarization, explained by the author in a former paper, has been considered as sufficient indication of two separate images; and upon this principle it has been stated that all crystals are doubly refractive whose primitive form is neither the cube nor the regular octohedron: but this is incorrect; for some of these crystals possess a doubly refracting structure in a high degree. Admitting the statement, however, it could not have been used as a rule for determining whether a crystal refracts doubly or singly; for it is more difficult to detect the primitive form than to examine the optical properties. Tungstate of lime, for instance, would have been reckoned a crystal without double refraction, when Haüy believed its primitive form to be the cube, although it is highly doubly refractive.

In examining the nature and properties of the coloured rings produced by certain crystals, the author found that the squares of the diameters of the rings were, in every case, proportional to the numbers which represent the corresponding tints in Newton's table.

When a plate of beryl was combined with a plate of calcareous spar, the system of rings was the same as would have been produced by two plates of beryl, one of which was the plate employed, and